containing system, or other system that can fetch the instructions from the instruction execution system, apparatus, or device and execute the instructions. In the context of this document, a "computer-readable medium" can be any medium that can contain or store the program for use by or in connection with the instruction execution system, apparatus, or device. The computer readable medium can include, but is not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus or device, a portable computer diskette (magnetic), a random access memory (RAM) (magnetic), a read-only memory (ROM) (magnetic), an erasable programmable read-only memory (EPROM) (magnetic), a portable optical disc such a CD, CD-R, CD-RW, DVD, DVD-R, or DVD-RW, or flash memory such as compact flash cards, secured digital cards, USB memory devices, memory sticks, and the like.

[0032] The firmware can also be propagated within any transport medium for use by or in connection with an instruction execution system, apparatus, or device, such as a computer-based system, processor-containing system, or other system that can fetch the instructions from the instruction execution system, apparatus, or device and execute the instructions. In the context of this document, a "transport medium" can be any medium that can communicate, propagate or transport the program for use by or in connection with the instruction execution system, apparatus, or device. The transport readable medium can include, but is not limited to, an electronic, magnetic, optical, electromagnetic or infrared wired or wireless propagation medium.

[0033] It is to be understood that the sensor panel is not limited to a touch sensor panel, as described in FIG. **1**, but may be a proximity sensor panel or any other sensor panel capable of sensing a touch event, a proximity event, or a gesture and having dynamically reconfigurable sensor size and shape according to embodiments of the invention.

[0034] FIG. **2** illustrates an exemplary capacitive sensor panel. In the example of FIG. **2**, in capacitive sensor panel **200**, as an object approaches a touch-sensitive surface of the panel, a small capacitance forms between the object and sensing pixels **203** in proximity to the object. By detecting changes in capacitance at each of sensing pixels **203** caused by this small capacitance, and by noting the position of the sensing pixels, a sensing circuit (not shown) can detect and monitor multiple touch events, proximity events, and gestures and generate an image of touch. The capacitive sensing pixels **203** may be based on self capacitance or mutual capacitance.

[0035] In a self capacitance sensor panel, the self capacitance of a sensing pixel can be measured relative to some reference, e.g., ground. Sensing pixels **203** may be spatially separated electrodes. Each electrode can define a sensing pixel. These electrodes can be coupled to driving circuitry via by conductive traces **201** (drive lines) and to sensing circuitry by conductive traces **202** (sense lines). In some self capacitance embodiments, a single conductive trace to each electrode may be used as both a drive and sense line. Touch events, proximity events, or gestures can be detected at a sensor pixel by measuring changes in the capacitance of the electrode associated with the pixel.

[0036] In a mutual capacitance sensor panel, the mutual capacitance of a sensing pixel can be measured between two conductors. Sensing pixels **203** may be formed by the crossings of patterned conductors forming spatially separated lines—drive lines **201** and sense lines **202**. Driving circuitry may be coupled to drive lines **201** and sensing circuitry to sense lines **202**. Drive lines **201** may be formed on a first layer and sense lines **202** may be formed on a second layer, such that the drive and sense lines cross or "intersect" one another at sensing pixels **203**. The different layers may be different substrates, different sides of the same substrate, or the same side of a substrate with some dielectric separation. Each intersection of a drive line and a sense line can define a sensing pixel. Touch events, proximity events, or gestures can be detected at a sensor pixel by measuring changes in the capacitance between the drive and sense lines associated with the pixel. In some embodiments, changes in other capacitances (e.g., between a sense line and a back plate) can also be measured to detect touch events, proximity events, or gestures.

[0037] The arrangement of drive and sense lines can vary. For example, in a Cartesian coordinate system (as shown in FIG. **2**), the drive lines may be formed as horizontal rows, while the sense lines may be formed as vertical columns (or vice versa), thereby forming a plurality of pixels that may be considered as having distinct x and y coordinates. Alternatively, in a polar coordinate system, the sense lines may be a plurality of concentric circles with the drive lines being radially extending lines (or vice versa), thereby forming a plurality of pixels that may be considered as having distinct radius and angle coordinates. In either case, drive lines **201** may be connected to drive circuitry, and sense lines **202** may be connected to sensing circuitry.

[0038] In some embodiments, drive lines **201** can be driven one at a time, while the other drive lines are grounded. This process can be repeated for each drive line **201** until all the drive lines have been driven, and an image (based on capacitance) can be built from the sensed results. Once all the lines **201** have been driven, the sequence can repeat to build a series of images. Alternatively, multiple drive lines **201** may be driven substantially simultaneously or nearly simultaneously.

[0039] Each sensing pixel can be associated with an area for which the sensing pixel is intended to detect touch events, proximity events, or gestures. For example, sensing pixel **203** can be associated with area **204**. Area **204** can be referred to as the size and/or shape of the sensing pixel. The size of a sensing pixel can depend on the overall granularity (or density) of sensing pixels. For example, a high granularity can imply a higher number of sensing pixels in a given area and thus a smaller size for each sensing pixel. The shape of a sensing pixel can depend on the overall layout of the sensing pixels. For example, an **8**-neighbor layout can imply a square or circular shape for each sensing pixel.

[0040] A smaller size and/or a particular shape can be beneficial to detect the position of a touch event, a proximity event, or a gesture with higher precision. A larger size and/or a particular shape can be beneficial to detect the general position of a touch event, a proximity event, or a gesture when higher precision may not be necessary. Therefore, dynamically reconfiguring the size and shape of the pixels as needed can provide a more efficient sensor panel.

[0041] Different characteristics of an object can result in different requirements as to the size and shape of pixels in sensor panels. Different applications can also have different requirements as to the size and shape of pixels in sensor panels based on the characteristics of an object expected to interact with the panels. Exemplary objects include a hand, a finger, a stylus, an optical pointer, and like objects capable of touching or being proximate to a sensor panel and targeting a portion of the panel. Exemplary object characteristics include